

What is claimed is:

1. A method for fabricating an array pH sensor and a readout circuit device of said array pH sensor, comprising: depositing a non-conductive pH sensing film onto an non-insulated substrate, thereby fabricating a separate array pH sensor and
5 detecting the pH value of the solution by using said array pH sensor; fabricating said readout circuit device of said array pH sensor according to the typical processes for making semiconductors; and combining said array pH sensor and said readout circuit device as a hybrid array pH sensor.
2. The method for fabricating an array pH sensor and a readout circuit device
10 of said array pH sensor according to claim 1, wherein said array pH sensor is fabricated by the following steps:
 - Step1: providing a substrate;
 - Step 2: growing an Al film by using a metallic mask and a vacuum evaporation machine;
 - 15 Step 3: growing a SnO₂ film by using a metallic mask and a sputter machine; and
 - Step 4: encapsulating the resulting product with epoxy resin.
3. The method for fabricating an array pH sensor and a readout circuit device of said array pH sensor according to claim 1, wherein said array pH sensor has a
20 tin dioxide/metal/silicon dioxide multi-layer structure or a tin dioxide/indium tin oxide/glass multi-layer structure.
4. The method for fabricating an array pH sensor and a readout circuit device of said array pH sensor according to claim 1, wherein said array pH sensor comprises a pre-readout circuit, a multiplexer, a rear end buffer circuit and an
25 amplifier circuit.

5. The method for fabricating an array pH sensor and a readout circuit device of said array pH sensor according to claim 2, wherein said substrate is selected from a glass substrate, a silicon substrate, a ceramic substrate or a polymeric substrate.

5 6. The method for fabricating an array pH sensor and a readout circuit device of said array pH sensor according to claim 3, wherein said tin dioxide/metal/silicon dioxide structure is formed by depositing an aluminum layer and a tin dioxide layer onto said substrate, and encapsulating the resulting structure with epoxy resin to form a opening channel, wherein a conducting line is
10 led out via said aluminum layer.

7. The method for fabricating an array pH sensor and a readout circuit device of said array pH sensor according to claim 3, wherein said tin dioxide/indium tin oxide/glass is formed by depositing an indium tin oxide layer and a tin dioxide layer onto said substrate, and encapsulating the resulting structure with epoxy
15 resin to form a opening channel, wherein a conducting line is led out via said indium tin oxide layer.

8. The method for fabricating an array pH sensor and a readout circuit device of said array pH sensor according to claim 4, wherein said readout circuit device of said array pH sensor receives different signals and amplifies these signals for
20 determination such that when the multiplexer is modified, a variety of array sensors can be fabricated and said array sensor can be applied for fabrication of potentiometric sensor.